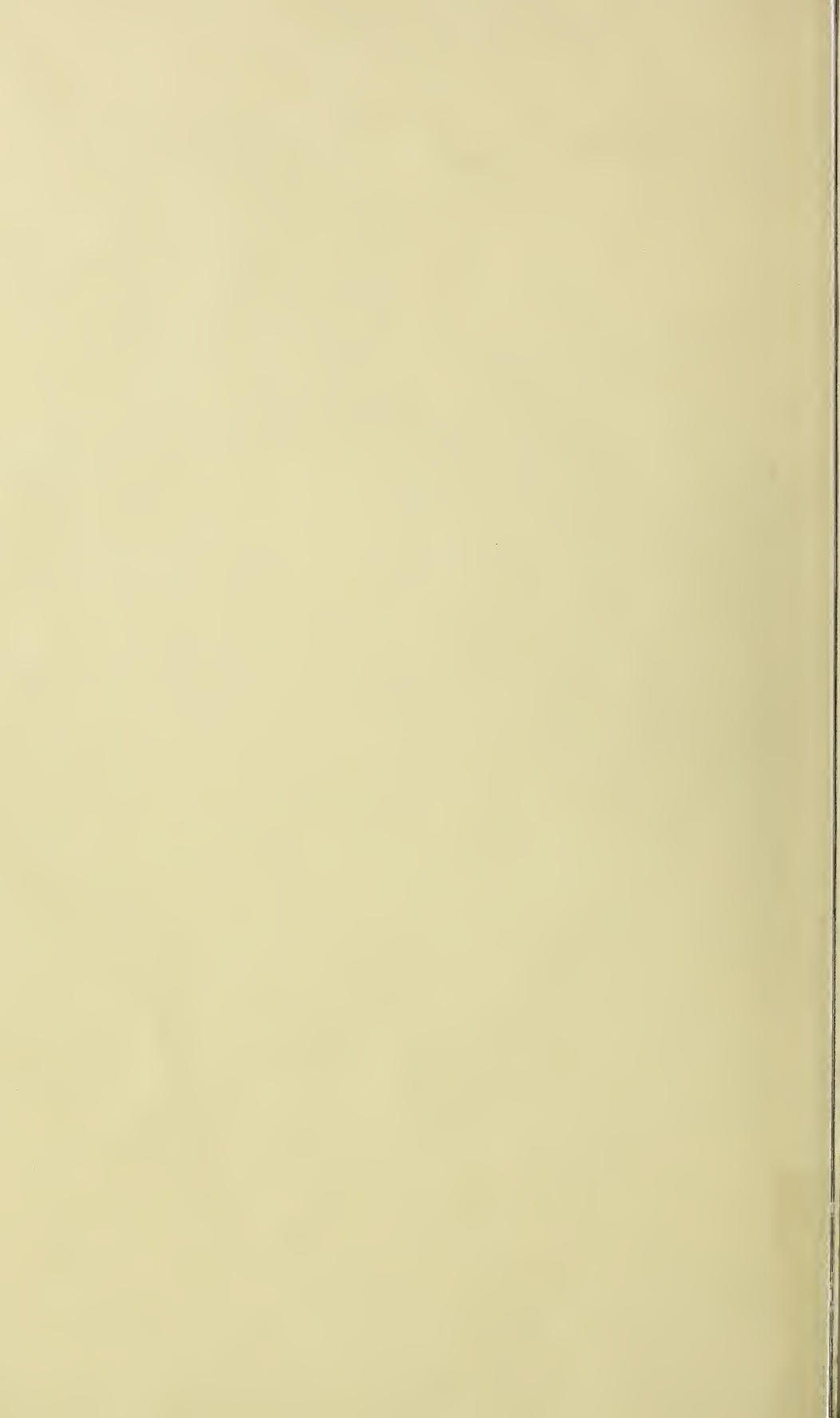


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THE AGRICULTURAL STUDENT

OHIO STATE UNIVERSITY, COLUMBUS, OHIO



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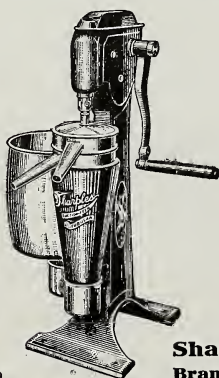
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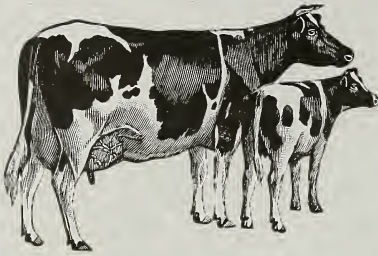
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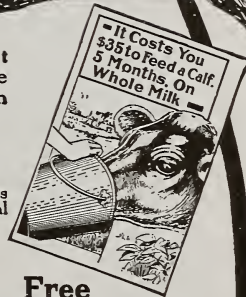
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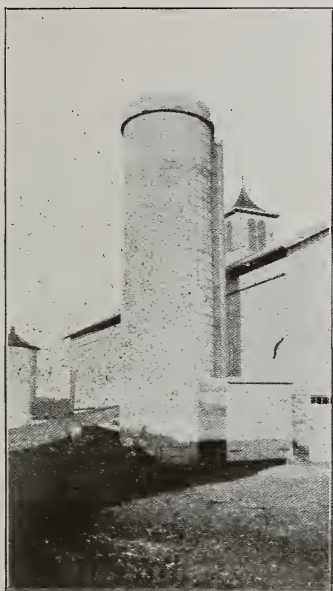
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Sept. 2.....	39.0	36.2	14.11	Sept. 2.....	39	36	14.04
Sept. 7.....	39.5	34.2	13.50	Sept. 7.....	39	34	13.26
Sept. 9.....	38.8	35.8	13.89	Sept. 9.....	38	35	13.30
Sept. 14.....	38.7	32.8	12.69	Sept. 14.....	38	32	12.16
Sept. 19.....	39.5	33.8	13.35	Sept. 19.....	39	33	12.87
Sept. 23.....	39.7	34.2	13.57	Sept. 23.....	39	34	13.26
Sept. 30.....	39.5	31.8	12.56	Sept. 30.....	39	31	12.09
			93.67				90.98

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A Winter Morning

THE AGRICULTURAL STUDENT

Vol. XXIII.

OHIO STATE UNIVERSITY, COLUMBUS, DECEMBER, 1916

No. 4

ACTIVITIES OF THE U. S. FOREST SERVICE

**How It Benefits the Farmer; Protects the Source of Water for Irrigation;
Affords Free Grazing for Domestic Animals; and Gives Market
for Farm Products by Maintaining Roads**

HENRY S. GRAVES, Chief Forester

THE forest service does other things besides caring for the national forests that serve the farmer directly. In the administration of the national forests the interests of those who till the soil or raise cattle, are given foremost consideration.

It is a mistake to think there is a gap between forestry and agriculture as they rightfully belong together. Nothing is farther from the truth than the picture of the forester trying to get good land away from the farmer in order to raise timber on it. Forestry, as applied to the farmer's woodlot is one phase of agriculture.

How the national forests aid farmers is told by the petition of more than a hundred of them coming from people in the Kootenai Valley of Montana, who had heard that the government might do away with the Kootenai National Forest. They knew that if the government let go, the land would be taken up by timber speculators, and be held for years without development. No more neighbors would come, no roads and schools and nothing of the progress would be possible under the plan of making good farm land available for permanent settlers under the forest homestead act.

Where timber is the important natural resource, its destruction means the economic abandonment of the re-

gion, and farmers who have established themselves there are forced to move out. In such regions, and there are many of them in the western mountains and the Appalachians, the presence of national forests means the permanence of agriculture in the valley lands.

Many thousands of farms are being developed in the National Forests themselves and more will be developed as the agricultural lands are classified and opened to settlement.

Special benefits to the farmer on, or in the neighborhood of national forests include the protection of water sources, particularly for irrigation, the free use of timber for home building, the free grazing of domestic animals, the building of roads by the forest service, and the market for farm products afforded thru the maintenance of permanent lumbering industries which depend on a lasting supply of government timber. They give the farmer a recreation ground, particularly beneficial as a relief from the hot dry valleys of the Pacific Coast during the long summer season of no rain.

The farmer in the east is likely to be interested in forestry thru his own woodlot, probably left as a remnant of the original forest out of which the farm was carved. In many cases the woodlot has been long neglected, and is not worth keeping on the ground it

occupies. Where the woodlot is in good shape, and has been amply protected from fire and from over grazing, the farmer often does not know how to dispose of the timber crop, nor how much that crop is worth.

To help in this situation the forest service supplies information on managing and marketing farm timber, and has worked with various state authorities in getting and printing facts about woodlots for a given region, and about the possibilities of sales of farm timber in that region.

The first point in woodlot management is to protect the timber from fire. The smallest ground fires are hot enough to kill tender seedlings, and prevent the new growth which should be coming on to renew the woodlot. Local and state organizations exist for the protection of timberlands from fire, and any farmer may obtain from the forest service a list of such organizations, or plans for their formation where they have not yet been established.

Much harm is done to timber and to shade trees by insects and disease. Infected or infested trees may be discovered and treated in early stages; and damage may be prevented or reduced by timely action. Advice may be had as to time and methods of cutting for given species, localities or markets. Information on the properties of woods and their relative values for farm use can likewise be had, and such facts may mean a considerable difference in the cost of a building and in the permanence of a structure.

In the prairie state advice is wanted as to the right trees to plant for shelterbelts or windbreaks, for the production of fuel wood or for farm construction and repair materials. The service tells where suitable planting stock may

be bought, and how it should be planted, tho it aims to put the inquirer into touch with his local or state agencies, such as experiment stations, state forestry departments, or forestry associations. These agencies should be in position to furnish the facts of most use to their own localities, and may prevent the planting of weed trees, on the representation of a glib agent, or the planting of a tree widely advertised but entirely unsuited to the region, as to soil or moisture conditions or frost-hardiness.

Anyone who has a woodlot to handle, who plans to plant a forest tree for any purpose, and who seeks the forest service for help may be assured of receiving such help, either from the service itself or from the best local authority to which the inquiry may be referred. All such queries should be accompanied by full details so that every phase of the subject may be considered.

All the information given out is based upon careful experiment and investigation work. A part of the forest service force is engaged in work of research tho the administrative work of the service in connection with the national forests is its chief business.

In the beginning the service was merely a scientific organization. In the centennial year the government made its first real step in forestry by appointing a special agent to study forest conditions in the United States. Five years later a division of forestry was created which was mainly a place for study and gathering information. It then employed only 11 persons, only two of whom had any training in forestry, and its total appropriations amounted to about \$30,000 a year. In 1901 it became the bureau of forestry, and in 1905, the forest service, charged with the administration of the national

forests, which were no longer mere "forest reserves" set aside from use, but "National Forests" managed to be of value to the people who could develop their resources of wood, forage, water, recreation, and the like, and yielding, to the people of the country as a whole, continuous, annually growing receipts in return for the use of the national forest resources. Last year these receipts amounted to \$2,500,000.

Nearly 4,000 persons are required to do the work of the service. The management of the national forests is in the hands of a field force on the ground. A large part of the administrative work is done from headquarters offices in the far west where most of the national forests are situated, and only a relatively small part is in Washington.

Each forest has its supervisor, who lives on or near it, and the forest itself is divided into ranger districts, each in charge of a forest ranger. The ranger comes in closest contact with the users of the forest's resources. He is a comparatively new figure in the peoples' service and his pine tree badge is the latest symbol of the government's helpfulness to its citizens.

The ranger must be a man of varied activities and of wide experience. The marine, with his globe-and-anchor badge, is, according to Kipling, "soldier and sailor too;" the rural postman, bearing the device which depicts

a ponyrider, is called upon, just because he is in Uncle Sam's employ as a public servant, to do many things besides merely delivering the mail; but the forest ranger with the lone pine on his little bronze shield is often the only representative of vested authority for many miles around, so he is likely to be called on for any and all sorts of help where the conditions are still primitive with pioneer vicissitudes. His official duties require him to know something of lumbering, of cattle and sheep raising, of mining, of surveying, of sanitation, and of other things that make up his daily tasks.

The average ranger district covers a little more than 70,000 acres generally of pretty rough and broken country. In the best managed forests of Europe it has been customary for the officer equivalent in rank to the American forest ranger, to look after only an average of 700 acres.

In respect to the national forests it may be said that the people of the country have expressed their irrevocable belief in government owned forests. In the short space of time since the beginning of the present century the nation's timberlands have passed from a condition which invited imminent destruction to one which assures careful and permanent protection thru wise use, which will mean a supply of timber for an indefinite period.



OUTLOOK OF SHEEP HUSBANDRY IN AMERICA

Considerations of the Past, Present and Future of the Industry

F. R. MARSHALL, U. S. Department of Agriculture, Washington, D. C.

IN discussing the past, present or future of the American sheep husbandry, it is almost impossible to avoid consideration of statistics. Quoting figures on numbers of live stock may be sometimes misleading, often but partially correct and confusing. However, statistics may be taken to show conclusively that the number of sheep in the United States has actually declined during recent years. To some extent

greatly increased. The reasons for this condition are well known. They contain nothing to cause uneasiness as to future prices or the financial safety of embarking in sheep husbandry on modern lines.

That the sheep husbandry on eastern farms failed to extend and develop as required to meet the needs of intensive agriculture, was due to supplies of wool, but more particularly to mutton,



Sheep at Pasture.

census returns may not fairly be comparable with those of former decades, on account of the present practice of marketing lambs, which, like most corn belt hogs, are born and leave the farms between visits of the assessor.

However, a decline in enumerated sheep from 64,000,000 in 1913 to 49,000,000 in 1916 is not to be accounted for by any criticism or interpretation of the figures. Our supply of home grown wool and of lambs has declined, while the demand for both products and particularly the popularity of lamb has

from cheaper western range lambs. The range supply is now decreasing, tho millions of acres of excellent forest reserve summer grazing, and of arid and semi-arid and drier range land will always be used for sheep. A material increase, or even a continuation of present supplies of western sheep and wool is not to be expected. It is the farmer sheep raiser who will have the opportunities of the coming decades in this field.

The eastern farmers' first and most attractive opening is in the raising of

lambs to be marketed when not more than five months old. There is no difficulty in such an enterprise that cannot be advantageously and profitably overcome. It is the well tended farm flock that must supply the markets and readjust live stock management to give sheep husbandry its rightful place on eastern farms.

Not all western flocks can get on the forest reserve summer grazing grounds

be remembered that when lamb values are above 10 cents per pound there is a profit on the gains and the margin needed is smaller than when values are on a lower level.

The trend of affairs in speculative cattle feeding has shown that with the diminishing supplies of feeders, and high prices, the speculator's troubles increase and it is the raiser who receives the largest profits. The man who



More of These Could Be Used on Ohio Farms.

and some of these pastures do not make lambs good enough for killers. Consequently there will continue to be large numbers of western raised lambs that will be sold as feeders and many farmers will continue to feed western lambs. Buying stock to fatten is as much a matter of speculation as it is one of feeding and farming. With a decreased supply of feeder lambs, their price will reach levels at which only those most favorably situated can be assured of the margin necessary for profit. It must

both breeds and finishes his market stock incurs the least risks and ordinarily secures the greatest net returns. The combining of the breeding and fattening is not only the safest, besides being a strictly agricultural enterprise, but goes far in furnishing a solution of the three questions now of greatest concern to farmers: the labor question; the condition of the soil and the full utilization of uncropped acres.

In New England and as far west as Ohio this country once had a general

and intelligently conducted sheep husbandry. This business was founded chiefly on wool production. With decreased prices for wool and increases in cost of labor and values of land, most of the fine wool stock has disappeared. The day is not likely to return that will allow a profit in keeping commercial flocks for wool alone in farming sections. The production of lambs for early marketing must be considered no less important than the production of wool.

In developing profitable systems of mutton sheep husbandry for high priced lands much is yet to be accomplished. The principles and controlling features of management have been demonstrated in England and in scattered instances in this country. It still remains for the best methods to be brought into practice. High prices will furnish a powerful assurance of interest and incentive to study. The animal husbandry departments of the agricultural colleges and experiment stations

can and will do a great deal. At present only a few of them are equipped for this work, the need of which is already urgent. No state college of agriculture could more fittingly and properly have strong material and personal equipment for teaching and doing research work in sheep husbandry than could the Agricultural College in Ohio. The state stands by itself in the peculiar adaptability to sheep raising and in the number and management of its flocks of mutton and fine wool sheep.

Ohio should logically furnish to the other states the men needed to teach and conduct investigations in sheep husbandry. The failure to realize this logical expectation is due to there having been no adequate response to repeated requests for the men, buildings and pastures, besides the financial support necessary. Better equipping the Ohio State University for work in sheep husbandry would be a profitable investment and would fulfill a duty long delayed.



SOME PHYSICAL AND CHEMICAL CHANGES IN SOILS

Effects That May Be Expected Thru the Addition of Manure

STANLEY B. SINK, University of Maine, Orono, Maine

MANURE is a by-product of the farm that is often worth more than the product for which we are feeding. It is a common expression among dairy-men and feeders, that "We have to look to the manure pile for our profit."

Manure when added to the soil has other effects than merely adding plant food to the soil. It loosens up the hard compact clays and loams, making them work easier, more porous, quickly drained, more thoroly ventilated and in general a much better home for desirable forms of bacteria and the roots of all cultivated plants.

Manure also has a tendency to flocculate or collect fine soil particles, forming the much desired crumb-like structure of the soil. This action is much the same as that of lime. The expansion and contraction of manure as well as other forms of organic matter, tends to loosen the soil on wetting and drying.

The water holding capacity of sands are greatly increased by the binding action of the manure on them. The loss of water from the surface of the soil is lessened by an application of manure. King of Wisconsin stated that the surface foot of soil contained about 18.75 tons more water on a manured field than one having no manure applied. The first four feet in depth contained 34.4 tons more than where no manure was used.

The addition of manure is also a means of adding millions of active bacteria to the soil, which work to set free not only the plant food of the manure but a part of the more or less insoluble store already in the soil. In fact manure is often added to muck and peat soils

where the only object in view is that of getting the action of these vigorous bacteria on the inert, practically unavailable nitrogen supply of these types of soils.

The lasting effects of manure are in large part due to its physical effect on the soil. At the Rothamsted Experiment Station in England, a plot where there had been no manure applied for the past 40 years yielded 13.5 bushels more wheat per acre than on plots that had never received an application of manure. This is an extreme case but ordinarily its effect is quite noticeable for several years or thru several rotations.

Manure adds to the soil the same elements of fertility as is ordinarily purchased in commercial fertilizers. Mixed manure will carry approximately one-half percent each of nitrogen and potash and about one-fourth percent of phosphoric acid or about 10 pounds each of nitrogen and potash and about 5 pounds of phosphoric acid. Altho manure is often said to be the best form of fertilizer it is a very unbalanced plant food, and to be used most efficiently, some additional phosphorus must be added to balance the other elements. By adding about 1000 pounds of 16 per cent acid phosphate to 8 tons of mixed manure, we would have a product corresponding closely to the analysis of a 4-8-4 fertilizer.

Much of the valuable part of the manure is in the liquid part, or it might be said, the most valuable portion is the liquid. In this form it can more readily be taken up by the plant and is first lost by leaching.

The chemical composition of manure

depends upon the kind of animals producing it, the age of the animals, the kind of work being done, whether producing milk, young or muscular labor and the feed the animal is getting. The valuation placed on a ton of manure produced by various animals by the United States Department of Agriculture is for cow manure \$2.65, horse manure \$3.10, hog manure \$3.25, sheep manure \$6.05 and poultry manure about \$6.35. The difference is in the percentage of water contained.

A farm having 4 horses, 15 cows, 30 sheep and 200 hens, would probably produce manure valued at \$675.00 per year according to the above estimates. This would be a considerable loss if wasted.

Manure decaying in the soil, not only breaks down its own organic matter liberates the elements of plant nutrition contained in the partially digested material, but the development of carbonic acid gas, renders the minerals of the soil more soluble. The humus formed also serves as a reservoir for the storage of plant food that otherwise leaches and runs away.

The value of the physical and chemical effects of manure, must be measured by the increased crop yields. An application of 12 tons of manure per acre on the Pennsylvania Experiment Station farm, produced an increase in crop yield, valued at \$19.75 while 16 tons per acre gave an increase valued at \$21.70 and 20 tons per acre an increase valued at \$22.73. In other words, the value of a ton of manure measured in crop producing power, was \$1.65 when applied at the rate of 12 tons per acre, \$1.32 at the rate of 16 tons and \$1.14 per ton when applied at the rate of 20 tons per acre. Figuring another way, the first 12 tons used had a crop producing power of \$1.65 per ton and the last 8 of the 20 tons only had a value of \$0.37 per ton. This shows that it pays better to spread what manure we have rather lightly over a large area than heavily over a small area. There is always a large waste when more manure is applied than the season's crop can use, because the liquid portions are washed away before the crop is able to utilize it.



ORCHARDING ON CHERT SOILS IN MARYLAND

How the Hill Lands Covered With Rocks Are Cleared and Cultivated

BROOKS D. DRAIN, '17

THE Tonoloway chert land found near the tops of the mountains near Cumberland, Maryland, was formed by weathering from the Helderburg limestones. On Warrior and Martin's mountains this formation is from 500 to 600 feet thick and forms the top and upper slopes. This is the largest single area of chert land in this part of the

little or no effect even on blackberries as the rocks act as a mulch.

This orchard land has been logged over and now has a dense growth of young trees. The original timber was hardwoods, mostly oak and chestnut. Clearing this land was done chiefly by burning. The large trees that are not burnt were cut down and the tract



Warrior Mountain, Showing Dense Growth of Young Trees.

country and has an elevation of from 1000 to 2300 feet. The frost line is about 1000 feet and unseasonable frosts are practically unknown.

In the orchards located on these mountains the surface soil consists of practically nothing but chert and limestone rocks mixed with leaf mold. The subsoil is clay which is also made up largely of stones. Washing on this soil is reduced to a minimum as the water can enter it so readily. Drouths have

again burnt. Sprouts that come up often make a third burning necessary. Rye is then sown as a smother crop and is cut for hay or grain. The yield of rye hay is usually about one ton per acre. Then the land is ready for the trees. The estimated cost of preparing the ground for these orchards varies from \$13.00 to \$20.00 per acre. Even then the land has still many stumps and grubs left.

During the spring and summer the

orchards are usually kept cultivated. The cultivation consists of plowing followed by harrowing at frequent intervals or in various cultivations with a single shovel plow. Spring tooth harrows do good work on this soil altho the rocks make their use difficult. Cultivating as well as nearly all other farm operations are done with mules as their small feet enable them to secure a better foot hold among the rocks than is possible for horses.

the slope of the mountains which are used for hauling the heavy loads and cross roads which are used for the lighter loads. The water used in spraying is usually pumped to the highest part of the orchard from where it is distributed, some growers using hose 150 feet long to reduce the amount of driving. In harvesting much of the fruit must be carried to the main roads where it is gathered up and taken to the packing sheds.



Surface Soil Consists Practically of Chert and Limestone.

Some growers sow cover crops about August 1 of crimson clover, millet, buckwheat or rye, but many allow the orchards to grow up with weeds at this time. Alfalfa seems to do well and is used some as a sod mulch crop, the first crop only being for hay.

Because of the steepness of the slope and the roughness of the ground the work in caring for these orchards is difficult and expensive to carry on. To facilitate the work some of the orchards are laid out in blocks like a city with the main roads at right angles to

The company operating one of these large orchards usually maintains a camp in which all the laborers employed in one of these orchards are kept. Floating laborers are used almost exclusively. Some of the men have worked on steamboats on the Ohio river, others in the powder mills in Mount Royal while others may have come from Ireland and Scotland and other places. The labor used is almost entirely unskilled.

When well cared for the trees grow rapidly on this chert land. Three to 5

feet of new growth in a year is not unusual. This last summer yellow transparent trees 3 years old bore considerable fruit; York Imperial trees 7 years old gave from 5 to 6 bushels of sound fruit. Altho the peach crop last summer was a partial failure, the yields are usually large and failures due to unseasonable frosts are unknown.

The orchards on this land are handled by large companies who control sev-

eral hundreds of acres. The land offers opportunity for development of the orchard business and more may be heard of this section of the country in the future. In southeastern Ohio there is considerable hill land which is now waste land and not farmed that could be used for orchard purposes by employing methods similar to those used on the chert lands of western Maryland.



WHAT WOMEN'S ASSOCIATIONS MAY ACCOMPLISH

Thru Organization They Work for Improvement of Home and Community

CAROLINE B. SHERMAN, U. S. Department of Agriculture, Washington, D. C.

THERE are few, if any, localities, no matter how rural, which cannot point to some definite achievements toward rural development which have been brought about by their local women's organizations. Sometimes, however, the work of these associations has borne fruit in the accomplishments of some other group, the women workers being content to labor for the sentiment and demand for some needed improvement and to leave its public fulfillment in the hands of some better known or more generally recognized agency.

Kinds of Organizations.

Practical, workable organizations for farm women may be divided into two classes—those for practical purposes and those for cultural. In a truly rural community the conscience, whether domestic or civic, is usually the best medium of appeal. For this reason, and because of our instinctive American preference for “doing things” and for seeing results, the more practical organizations with the more practical aims and methods are more apt to gain a strong hold on the community and make a permanent place for themselves than are the clubs formed for cultural purposes.

Practical Results.

One of the most useful results of such work, altho less spectacular than others, is the improvement of actual home conditions which sometimes results from the home economic courses and programs used by many of these clubs. Thru them, in all parts of the country, have come improvement in many individual cases in rural kitchen plans and equipment, in household fur-

niture, in color schemes and ideas of decoration and in simplified and systematized working plans.

The next step in the work of such organizations often is toward the securing of expensive labor-saving equipment, bought and used cooperatively. Vacuum cleaners, canning equipment and other rather expensive devices have been bought and used in this way.

Almost invariably such organizations in time turn their attention toward civic or community improvement. In many villages thruout the country railroad stations and their grounds have been made more attractive, public fountains erected, rubbish boxes have been installed and “clean up” days inaugurated. Rural associations, sometimes at considerable distances from town, have planted roads, installed road signs and otherwise improved public property.

The associations connected with churches and schools frequently do much in this direction. Aside from their more intangible results, which will be mentioned later, they usually leave a notable impress on the locality in the form of better church or school equipment, better church lawns and school playgrounds, often in better church bells and in school flags. Such work is for the good of the community as a whole; the benefits are by no means limited to the attendants of the institution concerned.

When it comes to securing even larger items for rural improvement, the choice varies interestingly in different parts of the country. In the Northwest, for instance, the work of establishing cooperative laundries has made

more progress than in other sections, due perhaps to the prevalence of the cooperative creamery, which has an equipment and force in constant order and to which the farm wagon goes at stated intervals. The securing and care of park sites and the extensive planting of shade trees in public lots, on streets and on country roads is naturally a favorite work in otherwise shadeless districts and in the dry country. Library collections and even library buildings are frequent aims and accomplishments of rural clubs and those in small towns; while the community or neighborhood houses, secured either by women's associations or by community groups of mixed membership, which are already so popular in the West, are gaining a decided foothold in the East, thru the influence and efforts of similar organizations.

In Texas and in parts of the West, the women's associations are especially interested in rest rooms. Sometimes these are provided by the clubwomen of the town for the use of all women, both from the town and country, sometimes they are maintained in town, by rural organizations, and in others they are established and maintained by joint effort in town and country. The rest room probably reaches its greatest use when it thus represents the combined efforts, and it would seem to fill this general function even more appropriately when situated in the courthouse and considered a county undertaking.

Federation.

Some form of federation of rural organizations, or of rural and town clubs, often makes it possible to secure many of the marked benefits for a community or a county which would not be possible if each club worked by itself, no matter how ardently. Fortunately, the sentiment for such federation is grow-

ing, some of the more informal forms being entered into for the expressed purpose of securing tangible and perhaps expensive but needed public improvements.

In parts of the West and Southwest county federation is the favorite form, and this idea is spreading to other parts of the country. In other parts of the West, in the large states, district federation is practiced, while many state federations and the General Federation of Women's Clubs are now making special effort to reach the rural associations.

Intangible Results.

The intangible results which are brought about in many instances by both practical and cultural organizations have a real value, altho this value is less easily gauged than is that of concrete achievements. For this reason they are often underestimated or ignored, but again there are few localities in which some old inhabitant, if discerning and fair-minded, could not indicate improvements in the attitude or sentiment of his community which have been brought about by women's organizations.

The church societies, when rightly conducted, have always done much to promote a better understanding between the minister and the congregation as a whole, and between members of the congregation. The patriotic societies everywhere are stimulating interest in both American and local history, and thru their essay work and other activities are doing much to foster study and expression in rural districts. The associations connected with the schools, besides procuring equipment and other tangible results, do much to stabilize attendance and to promote better understanding between teacher and pupil and teacher and

parent. They also serve frequently to unify rural districts where other clubs among adults do not exist. Instances have been known where these associations have broken down minor family feuds of long standing by stressing on the central common interest. The increased interest in sanitation, both in private homes and in a community, is traceable to the study and work of some women's club, altho the connection may have been forgotten after the officials took over the result. Clean and healthy amusements for both old and young have been fostered by many town and suburban organizations, and truly rural communities are now taking up the question. Social clubs, formed for the amusement of a limited membership, might well undertake such work as a tangible line of endeavor. The value of the occasional social hour, especially in rural districts where isolation is a factor, should not be over-

looked, but it is believed that all clubs existing solely for that purpose would find satisfaction in some one line of serious effort.

Community Organizations.

The movement toward the growth of general community clubs with a family membership of men, women and children is an interesting one. They should prove to be useful instruments in procuring results for the good of the locality as a whole. Existing organizations need not be abandoned, but members of womens clubs would do well to assist in such organizations, as thru them parts of the community often can be reached which would not be touched by more restricted societies. In this way, there is a possibility of arousing all members of a locality to the necessity, which every thoughtful rural woman feels, of making the farm and the country a pleasant and a desirable place for the family to live.



GRADUATE STUDY IN AGRICULTURAL EDUCATION

Progress in Teaching Demands Greater Efficiency of Public Service

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THE time is within the memory of those who, like the writer, do not yet admit that they are aged, when the prevailing popular sentiment regarding the tiller of the soil was not far removed from that of the Son of Sirach: "How shall we become wise that holdeth the plow, that glorieth in the shaft of the goad, that driveth oxen, and is occupied with their labors, and whose discourse is of the stock of bulls?" To the thoughtless urban dweller, the farmer was the hewer of wood and drawer of water. His uncouthness, his idiom, his dress, his surroundings, were part of the stock in trade of the cheap humorist, and as the "Jay" and the "Rube" he acquired those preemption rights in the comic paper of which it still seems difficult to dispossess him.

Nevertheless, the more thoughtful, whether in town or country, have not failed to realize the basal significance of agriculture for the country's prosperity. At the beginning of our national existence statesmen like Washington and Franklin urged the promotion of agricultural education, but it was in the great popular movement for vocational training which characterized the middle of the last century and which, seen in the light of its results, might also be called a new revival of learning, that our present system of agricultural education had its origin, dating substantially from the almost simultaneous chartering of the earliest of the agricultural colleges of Michigan, Pennsylvania and Maryland, in 1855 and 1856, and from the enactment by Congress in 1862 of the Morrill Act.

But the hopes of the pioneers of agricultural education were not destined to

be realized at once. After the organization of the land grant college there ensued a period of incubation during which visible progress was discouragingly small. The agricultural departments of the previously existing colleges and universities tended to develop into schools of science and attracted few students, while the separate agricultural colleges followed in the main the ideal of the trade school or were valued largely as a cheap means of obtaining a general education.

The evolution from this germinal stage dates from the introduction into these institutions of a second function, research, thru the founding of the agricultural experiment stations in the years from 1875 to 1887.

Evidence of the vivifying effect of this action were not long delayed. Despite some errors and weaknesses of administration, the experiment station succeeded in demonstrating the ability of the investigator to afford practical aid to the farmer in his calling and were a powerful factor in gaining the confidence of the people in the institution of which they formed a part. The important thing, however, was the reaction of research upon the institutions themselves. Investigation, here and in other lands, supplied new material for instruction, so that ascertained truth replaced venerable tradition and the outlines of a science of agriculture began to emerge. Agricultural teaching became increasingly differentiated, pedagogic methods were improved, and the student acquired in growing degree a mastery of the productive forces of nature.

It seems unnecessary to rehearse the

story of the recent progress of the agricultural colleges. It is a familiar tale. Greater efficiency in the public service has brought increasing recognition and growing demands for further service, and today the most serious danger to these institutions lies in the exaggerated expectations of their friends as to what it is possible for them to accomplish. Economic factors have contributed to this changed attitude of the public. The rapid shrinkage in our exports of grain and meat and, in a few instances, their actual importation, with the rise in food prices, have awakened the public to the importance of the farmer. From the comic weekly he has graduated to the editorial page of the metropolitan daily and improvements in his education, his farming methods, his marketing facilities, his home life, his social standards, are urged with a zeal which, if not always according to knowledge, testifies to a lively appreciation of his significance in the body politic.

I have thus indicated in barest outline the two eras thru which agricultural education in the United States has passed. Today we stand on the threshold of a third which may well surpass the second in scope and results as much as the second exceeded the first.

The original conception of the college or university was to a large extent that of a community of learning; a retreat, where the "white robed scholar" might pursue his studies undisturbed by the clamor of the vulgar and seek knowledge for his own intellectual satisfaction alone. But modern democracy has changed all that. It has endowed institutions of learning beyond the dreams of the fathers but it also insists that, whether privately endowed or tax-supported, they are public institutions, maintained not for the self-

ish advantage of their members but for the benefit of the whole community; and their response to this demand thru a variety of extra-mural activities has been one of the striking educational phenomena of recent years.

The colleges of agriculture have been especially responsive to this sentiment, and here again we may trace the effect of the introduction of the research element. It was obvious from the outset that the agricultural experiment stations and the United States Department of Agriculture would fail of their object unless the information which they acquired could be put in circulation, and from quarterly or occasional bulletins their publications are reaching an almost appalling total. But more significant still has been the organizing of means by which their work is being brought into contact with the farmer thru the spoken word and practical demonstrations. Taking example from the Church, it has been recognized that it is not thru the distribution of tracts but by the "foolishness of preaching" and the power of personality that the world is to be saved agriculturally as well as spiritually. The recognition of agricultural extension as a distinct function of the colleges, coordinate with research and instruction, culminating in the passage of the Smith-Lever Act, has opened a field of work whose extent can as yet be but dimly seen and whose reaction upon the intra-mural functions of the colleges the wisest may hesitate to predict.

It is no light undertaking which lies before us. In place of a few thousand college students our ideal is to educate the entire agricultural community both in the technique of agriculture and domestic science and with regard to the economic and social questions affecting rural life. When every rural school has

become a school of agriculture, when every farmer and housewife turns to the college for aid in preplexity, when we count our students by millions instead of by thousands, what shall all these people, young and old, be taught, and who shall teach it to them? Where shall we find the fountain from which shall flow the stream of knowledge and above all of inspiration which shall fructify and vivify this vast system and prevent it from becoming a teaching machine and our teachers mere peddlers of second-hand knowledge? We shall find it where it is found in all systems of education—in research, in the search for truth and in “the range and reach which it imparts to the mind.” It will be thru implanting in the minds of the rural population as a fundamental ideal a desire for and a devotion to truth, that is, of the spirit of research, far more than in any material achievements that the extension service will justify itself.

Research implies training, and if the research spirit is fundamental the promotion of graduate study and the provision of adequate facilities for it are equally fundamental. It is a serious business and is not to be entered into unadvisedly or lightly. The investigator must learn his trade and this means more intensive training than any undergraduate can hope to afford.

It was a preception of this fact which led to the establishment fourteen years ago of the Graduate Summer School of Agriculture, largely with the hope of inspiring the workers in our colleges and experiment stations with a greater zeal for research and affording them, thru personal contact, a fuller conception of the ideals and methods of original investigation. That the school has been measurably successful in attaining this object is, I think generally admit-

ted, but the demands of the coming years will far exceed those of the past and definite preparation must be made to meet the new conditions. In the present world crisis, when the foreign universities on which we have to so considerable an extent relied for graduate training are closed to our students, and when it seems questionable whether they will ever again play the role in this respect which they have in the past, should not a wise and sane conception of preparedness lead to a consideration of our domestic resources?

We suffer from the disadvantages of a physically great country. Effective graduate instruction can be given only by those actually engaged in research. Our centers of agricultural research, however, are widely scattered and comparatively isolated. While the aggregate of our scientific work in this field is considerable, it is steadily increasing, only a minority of the colleges are in position to offer any considerable variety of graduate courses. The question of how most efficiently to mobilize our resources, particularly those of the smaller institutions, in the field of graduate agricultural instruction demands serious consideration.

In this campaign for educational preparedness the agricultural colleges are called to play no unimportant part. Upon them rests to a large extent the responsibility for the wise development of a system of agricultural education destined to affect profoundly the fortunes, the lives, and above all the ideals of almost half our people and so be a most significant factor in shaping the future of the nation.

The place of graduate study in agricultural education is defined by the extent to which it can contribute to the training and the inspiration of leaders for this vast undertaking.

FEEDING CATTLE COTTON SEED MEAL

Good Results May Be Obtained From Its Use With Other Feeds

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THE feeding of cottonseed meal has drawn the attention of Southern investigators for a number of years. On account of the large amount of cottonseed produced, as a by product of the cotton crop, it was vital that the greatest possible revenue should be obtained from it.

Investigators found at an early period, that large amounts of the seed were annually going to waste because the feeders had found that often injurious results were obtained from its use. Soon it was shown that with a rational use of the seed combined with other feeds good results could be had, especially with fattening cattle.

Since the cotton oil industry has been developed a product of the cotton seed has also occupied the attention of the feeders. This was the cake, which could be ground into a meal of a fine consistency. This material came into wide use as a cattle feed in a short time.

In the process of extracting the oil, the hull is first removed so that this product also received attention. Feeders in the south soon began to use the meal in connection with the hulls as feeds for their cattle. Generally the cattle fed the meal and hulls were a rather poor lot and never proved to be very profitable. This gave rise to a mistaken idea of the value of the meal and it came into disrepute. Results obtained by experiment stations in the earlier experiments showed that under some conditions the cattle were blinded or broken in health after lengthy feeding periods. This gave rise to the idea that the meal was an unsafe feed to use.

Finally after much work had been done it was found that cotton seed meal fed in combination with corn silage gave results of excellent character. At the North Carolina Station steers have been fed as much as ten and a half pounds of cotton seed meal in combination with silage for periods of 120 days with no bad effects.

Since fattening cattle made such excellent use of the meal it seemed reasonable that dairy cows should do well on it also. A great deal of feeding was done and results reported that when fed in amounts up to $2\frac{1}{2}$ pounds per day, the meal was satisfactory but when fed above that amount there were dangers to be encountered.

In 1910 a graduate of Ohio State University became the head of the animal husbandry department at the North Carolina Agricultural College. On his arrival he found a herd of Jersey and grade cows of average character in the college herd. He soon added a number of Holsteins, some purchased in Virginia and others in Ohio, and later a half dozen Ayrshires from Pennsylvania. In studying the feeding problem he became convinced that cottonseed meal would have to be used as the basis of his ration if he were to practice economy in his herd management.

During his first year he tried several different combinations. Corn meal and bran each were used and later in combination but they proved to be too expensive. The results obtained in production were fair. Other combinations were tried and finally a mixture of equal parts by weight of distillers dried grains, dried beet pulp and cotton seed

meal were decided upon. These were fed with corn silage usually as the sole roughage. No legumes were available.

The herd was maintained in a dry lot thruout the year having the run of a couple of acres of ground adjacent to the barns. During the winter months they were in the lot every day that was agreeable, but were stabled at night.

During the first year that the northern cattle were in the herd they did only fair work. The changed conditions of feeding seemed to limit their

Of the cows going on test that year I have the records of five Holsteins and four Jerseys for a number of months. The Holstein cows began to milk heavily and seemed able to handle much feed, so they were fed to capacity. These five cows were soon fed 18 pounds of the concentrate mixture, together with 6 pounds of wet beet pulp and 40 to 50 pounds of silage per day. For the first 90 days of their test they averaged to consume feed as stated. The average production for this period



Jersey Cows on Pasture.

production to a certain extent. The second lactation period they began to improve. They handled the feed better and seemed better accustomed to the dry lot method..

Before these cattle freshened for the third period of milking in the herd it was decided to run private tests on the grade Holstein and register of merit tests on the Jerseys. It was intended to feed the same ration as in the previous years except in larger amounts as demanded by the cows in heavy milk flow.

was 51.6 pounds per day. One of the cows milked up to 75.6 pounds which was said to be the highest days milk record for the state at that time. It is certain that no other five cows from one herd in the state had averaged as well for the same length of time.

The average production for the five cows during the year 1912 was 9,833.3 pounds of milk and 357.07 pounds of butterfat; and in 1913, 10,093.9 pounds of milk and 305.98 pounds of butter fat. For the first six months of 1914 they milked an average of 8,063.3

pounds milk and 256.6 pounds of fat.

The Jerseys on the test were fed similarly but did not consume as much feed as the larger Holsteins. During the first 90 days of their milking period they consumed an average of 15 pounds of concentrate mixture, 6 pounds of wet beet pulp and 35 to 40 pounds of corn silage. These cows had been fed cotton seed meal since they first came in milk. Their average production for eight months and twenty-two days was 7,251.4 pounds of milk and 354.46 pounds of fat.

During 1912 three of these cows milked an average of 6,812.4 pounds of milk and 342.02 pounds of fat, and for 1913 with the four milking, one with first calf, they averaged 5,524.1 pounds of milk and 274.42 pounds of fat.

These results seemed to point out the fact that cotton seed meal could be fed in large quantities to dairy cows in combination with the feeds stated without bad results. This herd was in excellent condition all of the time and showed none of the weaknesses supposed to come from a heavy use of cotton seed meal. Wherever this meal can be purchased cheaply it may safely fur-

nish the basis of the concentrate ration for dairy cows. At times the meal was bought as low as \$23.00 per ton, altho this is an abnormally low price. A price of about \$29.00 is usually held for the meal.

In herds located in Ohio it would not be advisable to feed this to such an extent. Other feeds that will prove as satisfactory for production can be purchased more cheaply. However, it does show that the feed may be used more liberally without expectation of bad results. At the present time it is reported by extensive feeders that the cotton seed meal is of poor quality and that poor results are being obtained from its use. One feeder has said that bran is returning more milk than the higher protein feed. This being the case, it would not be advisable to purchase the meal at all. Under normal conditions a high grade meal at a reasonable price can be used with success.

It should be pointed out that the meal is a dangerous feed for calves and swine. It is never entirely safe to use it for dairy heifers until they are in milk but after that time it does remarkably well.



SECURING LARGER PROFITS BY COOPERATION

How a Group of Farmers in Northwestern Ohio Sell Their Eggs

C. E. GREEK, Kunkle, Ohio

THO a certain measure of cooperation is essential, organization is not exactly a factor in the home marketing of eggs. There are times in the year when the number of dozens of eggs gathered from the ordinary farm flock of hens will not fill a thirty dozen crate but by several farmers cooperating, one or more crates can be shipped each week. This is to be desired so the eggs will not become stale in storage at home.

To better facilitate the shipping of their eggs and to obtain the highest prices, several farmers in the neighborhood of Kunkle, Ohio, formed a cooperative egg shipping association. During the summer months when each farmer is getting a crate or more of eggs a week, each ships his own eggs but during the fall and winter when the production of eggs is light two farmers or as many as are needed go together to fill a crate of 30 dozen. The farmers that go together for shipping aim to have the same breed of chickens so that the eggs shipped are of a uniform lot. Before shipping the eggs are all graded according to size and color. When two or more farmers are shipping eggs together, they go as if one man shipped all of them.

In speaking of the pure white eggs only, they are shipped to New York City where the highest prices are paid for the white eggs. The eggs are shipped direct to a commission merchant who places them on the market, charging a commission for selling. One thing affecting the prices received for the eggs is gathering the eggs from the nests two or more times a day. Where a new nest is found eggs should not be

shipped for fear one might ship a partly hatched egg and this should be avoided as much as possible.

By experimenting eggs that have been gathered more than once a day from the nests usually brought from one-half cent to one cent a dozen more than those gathered but once a day especially in hot weather. The eggs are sorted each day removing all the smaller ones which answer the purpose of home consumption just as well as the larger and more perfect ones. Any surplus from this source are placed on the home market commanding the usual prices paid in the local market. Dirty eggs are all carefully cleaned with Dutch Cleanser, always being careful not to apply where there is no dirt on the egg.

The eggs are now ready for the crate which is the ordinary 30 dozen egg crate with enough excelsior in the bottom to absorb all jars and bumps. Care is always used in the filling that all the fillers are filled full. A thin layer of excelsior or a few thicknesses of newspaper are laid over the top and the top well nailed down.

The eggs put up as the above are strictly fresh uncandled and command the highest prices according to the quality. One of the home merchants had a man who was shipping two crates of eggs each week bring one crate to them and they shipped that crate at the same time to the same place as the man who brought it in but they received ten cents per dozen less for the crate they shipped because they came from a merchant and went in as another grade.

Eggs at the present time are 34 cents per dozen on the home market

while the New York market pays 58 to 65 cents per dozen. The receipts here are usually 60 cents and taking that as a basis 30 dozen would sell for \$18.00 on the New York Market. The express and commission on a single crate is 99 cents or a trifle over three cents a dozen. The more crates that are shipped at a time the less the express charges, so the value in cooperation. Deducting 99 cents from the \$18.00 leaves \$17.01 clear on a 30 dozen crate of eggs. Thirty dozen of eggs on the home market would net \$10.20 leaving a net gain in the New York market of \$6.81 per crate or a gain of 22.7 cents per dozen.

The lowest prices received is late in

the spring when the net profit drops as low as three cents per dozen. It is the desire of all shippers to produce the pullets that will make the winter layers for it is in them that the greatest profit and the easy money is made from the ordinary farm flock.

The plan of selling eggs according to their grade is an incentive to the farmers to get a line of purebred chickens, that their eggs may be uniform in size and color. The mixed flock will produce an uneven lot of eggs that will not command as high a price. To get prices that are worth while it will be necessary for the farmer to produce a uniform lot of eggs.



PRODUCING PORK AT A PROFIT

Some Factors in Pig Raising Brought Out by Club Work in Ohio

CLIFFORD T. CONKLIN, Extension Department, Ohio State University

AS the prices of feed stuffs continue to soar skyward, swine producers are compelled to exercise more skill and judgment in order to raise pork at a profit. Many are questioning themselves whether dollar corn can be fed without a loss and are selling their short crop at the nearest elevator. Others are going deeper into the problems of swine feeding, carefully balancing rations and eliminating undue waste, confident that their methods will prove successful.

During the past season the members of the boys' and girls' pig clubs of Ohio fed some 500 hogs which they later exhibited at the various county fairs of the state. Inasmuch as these pigs were weighed at the beginning and close of the contest and the youngsters were compelled to keep a record of the feed consumed by their pigs, data has been secured which may help in the campaign for sane swine feeding. Furthermore these pigs were all maintained under ordinary farm conditions which makes the results applicable to the average farm.

Before the contestants began to feed their pigs information was furnished regarding the most economical feeds to use. Particular stress was placed against the sole use of corn as a food for growing swine. As a consequence fully 95 percent of the juvenile pig producers used supplementary feeds with corn. The results were gratifying for the 500 pigs averaged 1.29 pounds gain per day at a cost of \$4.64 per hundred pounds.

Flat prices were established for all feeding material so that all were fig-

ured at the same prices. The following is a partial list of the prices.

Corn, per bushel.....	\$0.70
Middlings, per hundred pounds..	1.50
Bran, per hundred pounds.....	1.50
Tankage, per hundred pounds....	2.40
Skim milk, per hundred pounds..	.25
Pasture, per month per pig.....	.15

It is obvious that these prices are too low for present conditions but inasmuch as all feeds have advanced in nearly the same proportion the relative values of the various materials are still practically the same.

With the above scale of prices corn proved itself the premier fattening food when used with protein supplements. In none of the 25 county contests did the contestant who used ground mill feeds exclusively succeed in producing pork cheaply enough to win.

Margaret Lowery of Madison County, who won the state championship, produced 330 pounds of gain with 408 pounds of corn, 200 pounds of middlings and 1680 pounds of skim milk, with good blue grass pasture. Gerald Stevens of Fayette County, who stood second in the state contest produced 147 pounds of gain on 234 pounds of corn, 90 pounds of ground wheat and 567 pounds of skim milk. Jesse Hagler of Fayette County, who stood third, fed corn, tankage and skim milk. In fact these combinations of corn, tankage, middlings and skim milk proved economical and made rapid gains in practically every case.

In some cases the boys tried to use an excess of middlings, but this resulted in gains that cost as high as 8 cents per pound. One lad tried to raise his

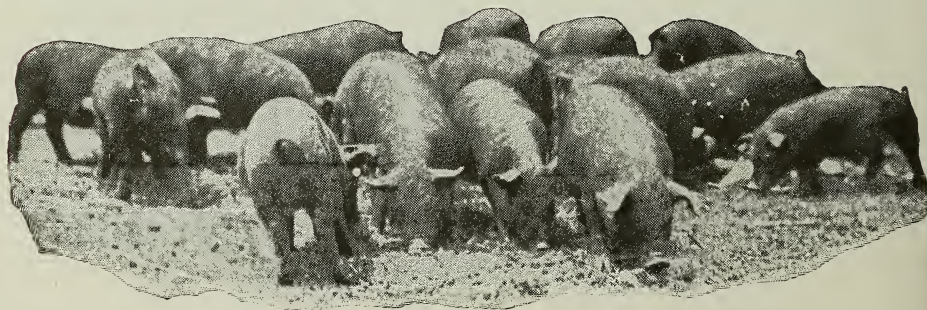
pig on bran and hominy feed but his cost was \$11.61 per hundred pounds. Another contestant fed equal parts corn, middlings and tankage at a cost of more than 8 cents per pound. Had this boy fed about one pound of tankage to 9 pounds of corn his cost would have been less and his gains doubtless as great.

The use of pasture helped to reduce the cost of gains. With a charge of 15 cents per month, pasture fed pigs generally were produced more economically than those kept in dry lots. Clover and alfalfa gave best results with blue grass next in order. In some cases young pigs were raised on pasture at a cost of 3 cents per pound. Of course these pigs were not fat, but they were of good size and vigorous. In fact the pasture fed swine generally showed more thrift than those confined during the feeding period. The results of the summer's contest seem to indicate that economical production of young pigs depends on the use of leguminous pasture. It is of interest to note that of the 500 pigs fed in the contest only 5 died during the summer's feeding, a significant commentary of the value of range.

At 25 cents per hundred pounds skim milk proved an economical feed. In fact all of the state winners and many

of the county winners fed judicious quantities of skim milk. The best results were obtained when about 3 pounds of skim milk were fed to each part of grain. According to Henry, 100 pounds of skim milk is worth half a bushel of corn. Hoard's rule to find the money value of skim milk per hundred pounds for fattening hogs is to multiply the price of live hogs per pound by 5. With present prices for corn and hogs, skim milk would have a feed value of about 45 cents per hundred pounds. The results of the summer's contest show that this estimate is none too high.

Another striking feature of the summer's work was the range in capacity for growth which different pigs would show. In the same county contest were pigs that gained one-half pound per day and others that gained 2 pounds per day. In some cases these two extremes were found where the pigs received the same feed. It is significant that the amount of feed required to produce a pound of gain was in both cases generally the same. In other words it was not so much a difference in efficiency as a difference in capacity for growth. For the farmer who desires to carry on a big business, turn his money quickly and sell his hogs early, the advantage of the big capacity hogs is apparent.





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COLUMBUS, OHIO, DECEMBER, 1916.

EDITORIAL

AGRICULTURAL EDUCATION.

A striking feature in the development of education in the United States during the last 20 years has been the increase in the growth of our agricultural colleges and agricultural experiment stations. For almost a generation after they were established little growth was made and they had little influence on agriculture.

The College of Agriculture at Ohio State was established in 1870, yet in 1901 it had an enrollment of only 198. The first agricultural experiment station in the United States was established in Connecticut in 1875. This was followed by the North Carolina Station in 1877, the New Jersey Station in 1880, the New York and Ohio Stations in 1882 and by 12 other stations between

that year and the passage of the Hatch Act in 1887.

However slow growth of our agricultural colleges and experiment stations had been, with the increase in the price of farm products and more interest in farming, people began to clamor for information concerning agriculture with the result that these agricultural institutions increased at a phenomenal rate.

Our land grant colleges and experiment stations are now without parallel. They are 67 in number and have a total valuation of endowment, plant and equipment of \$128,000,000 with an income of \$26,000,000. They employ 4,500 teachers and have a resident student body of over 60,000 besides a large number receiving extension instruction.

The American farmer has at his disposal the greatest educational service of any country in the world. No other country has made such enormous expenditures for the education of its people as has the United States. What the farmer or student may derive from this service will depend on his alertness, intelligence and perseverance.

LIVESTOCK SHOWS.

When the International Livestock Exposition was held at Chicago December 2 to 9, the livestock show season of 1916 was brought to a close. To run the state fairs and other livestock shows during a year involves an expenditure of money that one connected with their operation only could perceive. Are they worth while? Does this enormous expenditure make for the betterment of livestock husbandry and agriculture in general or could it be put to better use?

All agree that livestock improvement is the need of the hour. If the nation is to be assured of an adequate supply of meat, the task of putting the livestock industry into a good state of productiveness must be vigorously prosecuted. As the cost of production increases, breeders and feeders are not able to achieve the maximum results with the lower grades of livestock that constitute a larger percentage that now come on the market.

Education is a slow process and is obtained only after persistent endeavor and considerable sacrifice. It cannot be gotten only from the class room but must also be gotten from actual experience. As a laboratory for the study of livestock, the livestock show gives to farmers and students of agriculture an opportunity to study the best types of livestock in comparatively large numbers. It is a place also where he

will get enthusiasm and spirit to want to produce some prize winners, too.

Not only do livestock shows have an educational value in themselves but they also take the farmer away from home where he may come under a different environment and meet different people from whom he may learn something new. He will also learn to know that there are other places on the earth besides his home town. Livestock shows from an educational standpoint are surely worth while.

COW TESTING WORK.

The dairy business has so many leaks that only by the use of the best business methods can it be made profitable. It is necessary that every cow in the herd make a profit over the cost of feed. This can only be determined by weighing each cow's milk and the feed she consumes.

No herd of dairy cattle is better than its average production. If this average is low the herd is either paying a low profit or none at all. Business methods must be applied to lower the cost of production. Efficiency on the farm is as necessary as it is in the factory.

By working in cooperation, dairymen can obtain the benefits of business methods at a small cost thru the cow testing association. Thru an organization of this kind an expert can be hired to test and weigh the milk and determine the feed cost for each cow in the herd. The expert usually spends one day at each farm in the association.

A cow testing association is a cooperative organization with local officers. It can also be used for advertising the sale of cattle as well as for testing. At present there are 21 associations in Ohio each having 26 members who own over 300 cows. This makes more than 6000 cows in Ohio that are being tested

thru the association. These farmers are realizing the value of cooperation.

The dairy business is well adapted to cooperative organization. Concerted effort by dairymen will mean greater profits on milk and cream by eliminating the wastes, and the development of more productive cows.

AGRICULTURAL JOURNALISM.

"Agricultural papers are this day, in my judgment doing more to promote the true growth of the country and the substantial enduring welfare of the people than Congress, the army and the navy." So spoke Horace Greely, a man who had no personal interests in the farm press and who at the time was publishing a paper in competition with the agricultural papers. Yet we have no course in agricultural journalism here at Ohio State University by which students in the College of Agriculture could prepare themselves for work on the agricultural papers of the country.

The subject offers a wide field of service and capable, efficient men are few. Examining the agricultural papers of the country would at once show this fact. Better trained men and more of them are needed for work on the agricultural papers which are doing so much in promoting the true growth of the country and the substantial enduring welfare of our people.

It is true that we have a course in

journalism which offers work on the **Daily Lantern**. For the student who expects to enter the daily newspaper work, it offers excellent opportunities for practice, but the course does not meet the needs of the agricultural student who expects to enter farm paper or experiment station work where he will be required to prepare articles, bulletins and other reading matter to be read by farmers.

Such a course could be given without a great expenditure of money and without conflicting with any of the other courses in the college. The students in the course could get actual practice in putting out an agricultural paper by doing work on *The Agricultural Student*. This would aid in keeping the magazine from becoming a one or a two man paper and would put it on a firmer foundation, thus resulting in a paper that would more nearly be an expression of the work done in the College of Agriculture.

Some of the other agricultural colleges of the country have courses in agricultural journalism in which no attempt is made to fit students for the daily field. The student is not asked to acquire ease of expression in writing by roundabout training on a daily newspaper. Why can we not have a course in agricultural journalism here at Ohio State?



Home Economics Department

THE SELECTION OF TEXTILES

GRACE G. WALKER, Home Economics Department, Ohio State University

CARPETS, rugs, curtains, draperies, table linens, towels, bed linens, blankets and clothing are an important part of the equipment of every home. The woman is the chief purchaser and upon her rests the responsibility in household affairs of making each dollar procure full value. She should have a knowledge of the different fibres of which these materials are made in order that she may buy intelligently. She should train herself to recognize the look and feel of the leading fibres, yarns and woven materials, also the names and prices of the standard materials.

The common materials used for textile fibres are cotton, linen, wool and silk, each one has its characteristics, each its definite use. Cotton is the cheapest and most plentiful and because it is the cheapest it is not adulterated with any other fibre. When the material is to be sold as cotton cloth, however, it is frequently made to appear heavier and better than it is by the addition of a mixture called sizing. This sizing may be starch gum glue or china clay and may add a large percentage to the weight of the cloth.

The space between the threads are filled up and a good finish is given the cloth, but the wearing quality is not increased and when the sizing disappears leaves the cloth poor and flimsy. This is one form of adulteration and may be detected by the feeling as the sizing imparts a harshness. It may be detected by washing and boiling, or by holding it up to the light when the

starch can be seen between the threads.

Linen is much more expensive than cotton and when linen prices are paid linen should be demanded. Since the two fibres linen and cotton are hard to distinguish from each other it is easy to deceive the buyer. Materials sold as linen are often mercerized cotton, cotton and linen, or ordinary cotton. Table linen is one place at least where we desire all linen because the linen fibre is long, smooth and quite lustrous, it is strong and there are not so many fuzzy ends as in cotton. When woven into cloth it is not only lustrous and rich looking but because of its smoothness it stays clean longer. The snowy whiteness of linen obtained by bleaching is permanent and since the linen fibre takes dye with difficulty and parts with it readily it also does not retain stains as cotton does.

To distinguish linen from cotton examine the threads carefully; cotton is made up of short fibres which project from the surface of the thread and become fuzzy when rubbed. When broken, cotton has a tufted end while the linen breaks are more even. Another test is to put a drop of olive oil on the cloth and press between blotting papers. Linens become more transparent than cotton. There is a peculiar leathery feel about good linen which cotton will not give and the luster is different. The texture of linen is such that the heavier kinds hang well in folds, lie flat on the table and are very artistic for many purposes.

Wool, the second fibre in importance

in this country, is an animal fibre and differs greatly from cotton and linen. Wool from the sheep's back is curly and possesses a scaly structure. The scales on the wool fibre when moist and warm stand up, and when cold and dry or cold and moist lie flat. This peculiar structure gives the wool fibre the property of felting or matting very closely together. Wool is also quite elastic. Since the demand for wool far exceeds the supply there are many devices for making the supply go a long way and consequently many methods for deceiving the buyer.

In adulterating a material the manufacturer seeks a material cheaper than the one he wishes to adulterate and one which can be concealed readily. Wool when combined with cotton makes a material which wears well but does not keep its shape. It wrinkles more readily and if light in color soils quicker than all wool and of course should receive a lower price than all wool.

There are two classes of wool material known as, woolens and worsteds. Worsteds are made of the longer staple wools, combed and drawn until the fibres are parallel and then twisted. In worsted materials there is no attempt made to cover the weave so it is more difficult to adulterate than the woolen materials unless entire cotton threads are woven with worsted. These are more easily detected than a mixture of cotton and wool. Woolens are usually made of short wool carded and spun into yarn in which the threads lie in all directions. When woven the surface is generally heavily fitted, so that the warp and woof threads are covered. This affords a splendid opportunity for adulteration since cotton or poor wool may be covered up by the surface fitting. Common examples of woolens are flannels, broadcloth and venetian cloth;

of worsteds are serge, shallie, panama voile, and men's suitings.

Because the demand for wool materials is greater than the supply it is necessary to resort to various measures to increase the supply of cloth. One method is to use the wool over and over again. Rags are sold to the rag man who in turn sells them to the dealer and the dealer sells to the "shoddy" manufacturer who cleans them and tears them up, they are then respun and rewoven either separately or with new wool or with cotton. Such material looks well for a time and has its place but must not be bought for new wool or demand the price of good woolen cloth.

The best tests to make for adulterations of textile materials are chemical or microscopic ones, but these are not practical for the average buyer and others must be sought. The burning test is a good one to distinguish wool from cotton. Ravel the threads each way and burn one thread at a time. Cotton burns with a flash, has little odor and leaves no ash, wool burns slowly, chars, has a characteristic animal odor and leaves a crisp ash. If shoddy the fibre is very short.

Silk is sometimes known as the fibre of luxury, it is the most expensive to cultivate, the longest and the strongest as well as the most beautiful fibre used for textiles. Since it is expensive and the demand for it is great there is also a great tendency to adulterate it. The price of silk is less now than in olden times, but the silk is not so durable. Silks that have been laid away for many years are still in a good condition but the silks of today that are laid away for a few years may fall to pieces, and their wearing quality can not be compared with the silks of long ago. The reason is clear; raw silk is high and

the waste in cleaning is great and if the manufacture is to sell silk at the price demanded by the public he must make up the waste or loss in cleaning in some way.

Silk has a great ability to absorb dyes and metallic salts without apparently changing the quality of the material and since dyes and metallic salts are cheaper than silk, the manufacturer makes great use of these materials. Loading is the common name given to this process of treating silk and it is common practice to add 30 percent of foreign material, but it is possible to add 250 or even 300 percent.

When we buy novelties and do not care how short their life is these heavily weighted silks do very well, but where we desire durability and the silk begins to cut or split after a few wearings we realize the disadvantage of our modern methods.

Burning is the simplest test for silk; a thread of pure silk will burn slowly leaving as it burns a small amount of

crisp ash in a ball at the end of the thread. Heavily weighed silk burns leaving an ash in the form of the original thread and drops to pieces when touched. This ash left in the shape of the original thread is metallic salts and dye stuffs.

SANDWICHES.

Sandwiches may be used for the lunch boxes, a quick home lunch, for the friends who drop in, for Sunday evening suppers and in any number of ways that will occur to a housewife.

Bread for sandwiches should be a day old, the slices about one-quarter inch thick. Each slice should be spread with butter to keep moist and prevent filling from soaking in. The filling of a sandwich should be in proportion to the thickness of the slice of the bread. Wrap in waxed paper to keep from drying out.

White bread, graham, whole wheat, rasin, nut and brown breads are suitable for sandwiches.



Secondary Agriculture

RURAL OPPORTUNITIES FOR CITY BOYS AND GIRLS

O. H. BENSON, U. S. Department of Agriculture, Washington, D. C.

THE long summer school vacation, started by the early pioneers for rural schools, was planned from necessity. This system of vacation became a precedent, thoroly fixed, and was later, as towns, villages and cities developed, adopted by the city people out of stupidity.

When our public school officials appreciate the fact that a school day and its program should be given one-half to formal book and class room work and one-half of it to vocational training, direction in play and youthful contests and the more natural exercises in the education and development of the child, it will then be discovered that the summer is the most important and worth-while time of the year for the education of our boys and girls. Summer vacations, resort education and sea shore abnormalities are enemies to safe and normal education of American childhood.

Rural childhood is more fortunate than city childhood. City boys and girls, not the rural, need your sympathy. The work and play of the country children is both natural and creative. The work and play of the city boys and girls is unreal, artificial, and of little constructive value to a growing, inquisitive child.

Country boys live in homes. City boys live in houses. Country boys and girls have the companionship of parents, brothers, sisters, and hired help every evening. City boys and girls are scattered, or if fortunate enough to remain at home, are in charge of nurses or col-

ored servants, with parents in attendance at lodges, missionary meetings, moving picture shows, card parties, dances or receptions.

This of course is not true of the best or exceptional homes and minority of better class city parents, but to the majority and common class of city dwellers. Over 60 percent of our city homes and parentage as well as our school men and systems will classify in this class, and should ponder seriously these statements.

The country home keeps up a live interest in farm interests, growing stock, and ripening fruit; while the city home stimulates thoughts of society, politics and city gossip. Country boys and girls follow the educational cycles of the grains from the seed bin to the field, from the field to the table, while city children follow the food stuff from the commercial can or pack to the table.

Rural children work with parents. City children have little to do with, and little acquaintance with the work of fathers and mothers, and often plan their own activities with strangers. Rural boys and girls are educated on the farm, in the garden, and in the kitchen; city boys and girls are educated in the parlors, paved streets, summer resorts, seashores, and at moving picture shows.

City boys have nothing to do but play and kill time, except the few more fortunate poor children who sell papers, shine shoes, and deliver groceries. Country boys have so much to do that they must plan in a business like way every

day's performance, in order to find time for reasonable play and rest. In this we have much of the secrecy and origin of rural made fame and the distinguished service of the farmer's son. They have live, interesting and economic pets, while city boys have toy guns, cannons, Zeppelins, teddy bears and other frail artificial toys.

The future of America depends upon a liberal plan of reciprocity educationally between the city and the country. City children should be given country opportunities for their own conversation and education. Country men and women may well be given the business training and advantages of city life. The business of city life of America depends in a large measure upon rural trained men and women. The conservation of our city population depends upon giving the overtrained, nervebroken, sallow-complexioned office and factory people and their offspring an opportunity for recuperation and development in the back yards, vacant lots, and in the open country.

The school and home garden activities, directed by paid, sympathetic, efficient leaders, are worth more to the education of the city boys and girls than over-stocked artificial parks, play

grounds and expensive play ground equipment. Many of our cities have made the serious mistake of spending all of their money on patented playground equipment, and nothing on play-ground leadership and direction.

The city father says, "What shall I do for my boy? I have no work for him." The rural father says, "Where shall I get a hired man, so that I can give my boy a chance to go to school and get a reasonable amount of education and the necessary play."

Rural boys and girls are given opportunity thru the club project, to contest and play with crops, animals, farm and home interest enterprises. City boys and girls are allowed in many instances to connect their play and contest nature up with things unrelated and unsympathetic with the development of home life and citizenship.

What is going to be done for the city boys and girls? The vacant lots and present weed patches of our cities can be utilized for both children and playground activities. They should be under the leadership and direction not the supervision of efficient leaders. We have gone mad in some sections on supervision, what we need is real leadership.



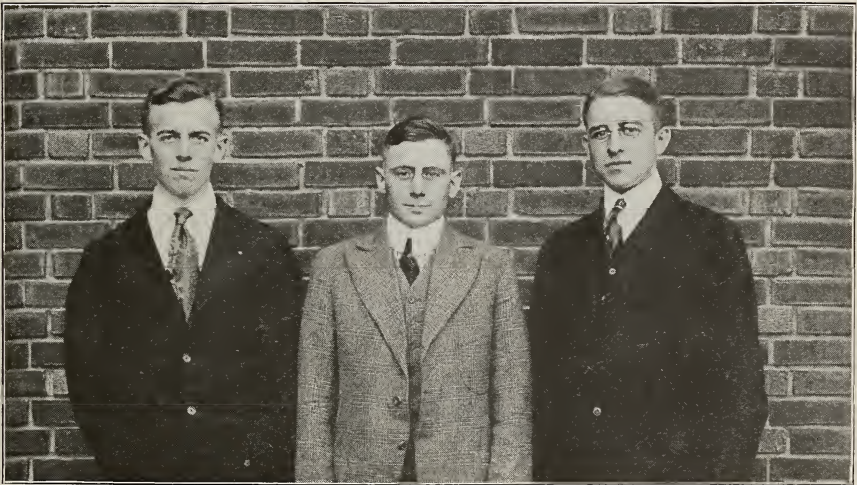
WITH THE CLASSES IN AGRICULTURE

Trips Taken to Livestock, Truck, Fruit and Dairy Farms in Ohio

RECOGNIZING the value of the practical side of farming in connection with an agricultural college course the instructors in the different departments in the college conducted more numerous and extensive trips this fall than ever had been undertaken before. Visiting some of the best dairy farms in Ohio was the record of the dairy team before it made its trip to the National Dairy Show at Springfield, Massachusetts, for the students judging contest.

cattle, where several rings of champions were judged. South Farm at Willoughby which was visited in the afternoon led out its usual display of Ayrshires. Here some of the best individuals of the Ayrshire breed were judged. The third day was spent at Cherry Farm at Painesville where several excellent Holsteins were brought out and exhibited to the students in regular show ring style.

The dairy team was composed of



Dairy Cattle Judging Team (Left to Right)—Feller, Rarey, Thwing.

Leaving on Sunday night the team went to the farms of E. H. Baker at Gates Mills, and R. D. Gates at Novelty, where they judged Guernsey cattle on Monday. Here they found herds that combined show ring quality with production to a remarkable degree as both herds showed averages better than 500 pounds of butter fat per cow, besides having prospects in the herd for much higher records.

On Tuesday the team went to the Hilltop Farm at Wickliffe, which is noted for its line of Island Bred Jersey

Walter D. Feller, John M. Rarey and Howard F. Thwing, seniors. They were coached by Professor Schuyler M. Salisbury.

International Judging Team.

After a little preliminary judging done on the University livestock, the class in advanced livestock judging began training in earnest by starting a series of trips to livestock farms in the vicinity of Columbus. The first jaunt was made on October 12 to the Palmer sheep farm located at Wagram, a station about 10 miles east of Columbus.

Here they had the opportunity to judge Southdown and Shropshire sheep of the kind that carry off ribbons at the fairs in Ohio and the central west. The following day was spent at the Fairfield County Fair at Lancaster where several rings of sheep, hogs and cattle were brought out for the students to work on.

The following week found the class judging horses at the farm of George Dix at Delaware where the class had its first opportunity of judging some of the big black and gray Percherons. Delaware County is known the country over

liam Montgomery, Howard F. Thwing and Brenton C. Zimmerman. Professor Donald J. Kays is the coach.

The remaining trips were taken by the team to farms in the vicinity of Tiffin and Sandusky, to the farms of the Haglers and Sam Clever in Fayette County and to Carpenter and Ross at Mansfield and Bell Brothers at Wooster. On their final trip the team left Columbus on Sunday night, November 26, for Lafayette, Indiana, where they judged livestock at Purdue University on Monday and horses at J. Crouch and



Dairy Cattle Judging Team (Left to Right)—Feller, Rarey, Thwing.

for the production of its fine Percheron horses and surely some of them were at this farm.

On October 28 the class went to the farm of Smith and Houston which is located about 10 miles northwest of West Jefferson. Here they judged Belgian and Percheron horses, some of which represented the best to be found in their breed. The farm of Thomas Johnson at Camp Chase was visited the following week after which the team was picked.

Students chosen for the team were Dwight L. Barnes, Griff Eidson, Wil-

Sons on Tuesday. From there they went to Urbana, Illinois, where they judged livestock at the University of Illinois on Wednesday and Thursday, leaving for Chicago on Friday for the contest at the International on Saturday.

Rural Economics Class.

Studying farming in its actual state, was the work of the 75 students in the class in farm management which is conducted by Professor John I. Falconer. During the fall 20 farms were visited. The things considered on these trips were the size of the farm, the manage-

ment, value per acre, amount and kind of crops and livestock raised on farm and in the community and the equipment.

Besides the trips which could be made in a half a day, two all day trips were made, one to the farm of former dean, Homer C. Price, at Newark, and another to several farms in Marion County. Price owns a farm of 215 acres, 60 acres of which is devoted to commercial orcharding. He also has a herd of pure bred Red Polled cattle.

The trip thru Marion County was made possible by the cooperation of county agricultural agent M. C. Thomas of that county, who enlisted the county farm improvement association and farmers in transporting the students to the different farms. The farms of the county are conducted on a large

scale order and are devoted largely to the production of livestock. Cattle and hogs and a few sheep many of which are purebred consume a greater part of crops raised in the county. Purebred horses are also raised to some extent.

Farm Crops Class.

Students in the advance course in cereal production under the direction of Roy G. Wiggans, spent Friday, November 17, in Toledo, studying the handling, buying and selling of grain at a terminal market. The class aided in the inspection and grading of the newly arrived cars of grain and visited the large terminal elevators and seed inspection laboratories. The students were permitted to go upon the floor of the Toledo Produce Exchange where the actual buying and selling was done.



Students in Dairying Participating in the Parade Boosting Columbus for the National Dairy Show in 1917, Held When the Jersey Special Going From Waterloo, Iowa, to Springfield, Mass., Passed Thru Columbus on October 3.



Edgar C. Richey, agricultural agent in Henry County, Indiana, was appointed county agent of Franklin County, Ohio. He began work November 1. Mr. Richey is a native of Noble County. Following his graduation in '07, he took a position with the bureau of plant industry of the United States Department of Agriculture. He was stationed at New Orleans, Chicago, and other points.

In 1911 Richey resigned from this position to become instructor in Agriculture at Ohio Northern University at Ada, Ohio. In addition to the regular class work he had charge of a 50-acre farm at the University which was used for a laboratory. He conducted some experiments in the use of forage crops for hogs on this tract in cooperation with the United States Department of Agriculture.

In 1913 Richey was appointed County agent for Henry County, Indiana, with headquarters at Newcastle. He has his new quarters in the Board of Trade Building, Columbus.

J. C. Hedge, '11, newly appointed agent of Summit County, has assumed charge of his work. His headquarters are in the court house at Akron.

M. O. Rugby, '04, agricultural agent in Trumbull County, has been instrumental in assisting the milk producers near Warren and the city dealers in agreeing upon a satisfactory price for milk.

D. R. Van Atta, '10, agricultural agent in Hamilton County, has perfected the organization of a county farm bureau association. The county board of commissioners have passed a resolution providing for an appropriation of \$1500 to assist in supporting the work of the county agent.

D. W. Galehouse, ex-'01, agricultural agent in Mahoning County, has resigned to become state leader of boys' and girls' club work in North Dakota. Mr. Galehouse organized a number of boys' and girls' clubs during the two years he was agent of Mahoning County.

Recently he was instrumental in organizing a county horticultural society which will hold horticultural shows lasting two days at Youngstown early in December. The purpose of the exhibit is to awaken interest in orcharding and also in a uniformly better quality of fruit. Instructions will be given regarding varieties and grading of fruit also demonstrations in pruning of trees and thinning of fruit.

Walter E. McCoy, '12, agricultural agent in Clarke County, has started several demonstrations with ground limestone. The limestone was donated by a quarry company to a number of farmers who were willing to apply it. Several tests of wheat varieties are being made in four different places in the county. Varieties of wheat that have been grown as well as new varieties are included in the test.

Everett P. Reed, '14, is an agronomist at the New York Experiment Station at Geneva.

Knott C. Egbert, '90, has resigned his position as county agent of Sandusky County, effective January 1. He was formerly employed in agricultural work among the Indian reservations of the West before accepting his present position.

Walter E. Foster, '16, and Blanche McNeal of Juanita, Pennsylvania, were married October 25. They will reside near Thornville where he will operate his father's farm. Foster took special work in animal husbandry and expects to raise only purebred livestock.

J. W. Tulloss, '14, is farming near Mt. Vernon, Ohio.

Byron E. Pontius, '14, and Carrie Clifton, '14, were married at Wauseon, August 19. Miss Clifton has been employed since graduation as teacher of home economics in the high school at Wauseon. Pontius is head of the animal husbandry department in the State School of Agriculture at Alfred, New York. At Ohio State, Miss Clifton was secretary of senior class. Mr. Pontius was a member of the International Livestock Judging Team. They will make their home at Alfred, N. Y.

Mr. Schmidt is organizing the high school teachers of Agriculture in Ohio. A committee consisting of R. E. Crouch, Hebron; Wm. T. Spaton, Plain City, and Roy C. King, Lockbourne, met at Townshend Hall, October 14, and arranged a program for a sectional meeting of agricultural teachers at the state convention December 27 to 29, 1916.

Joseph P. Hershberger, '12, agricultural agent of Highland County, assisted in planning and arranging the agricultural exhibit at the County Fair held in October.

T. D. Risser, '09, is farming 400 acres at Pandora, Ohio. He makes a specialty of buying and selling draft horses, besides feeding a large number of cattle and sheep.

Clarence M. Sallee, '16, is with the Crutchfield and Woolfolk Wholesale Fruit Marketers Company of Pittsburg. He is supervising the company's apple-packing business in West Virginia.

Jacob P. Schmidt, '16, is principal at Bourneville High School this year and is doing post graduate work in absentis under Dr. Paul L. Vogt of the Rural Economics Department, and Dr. J. B. Park of the Department of Farm Crops. "Relation of the village to the marketing of perishable products in their environment" is the subject of his work under Prof. Vogt. Under Prof. Park he is testing out five varieties of winter oats for their winter hardiness and yield in the hills of southern Ohio.

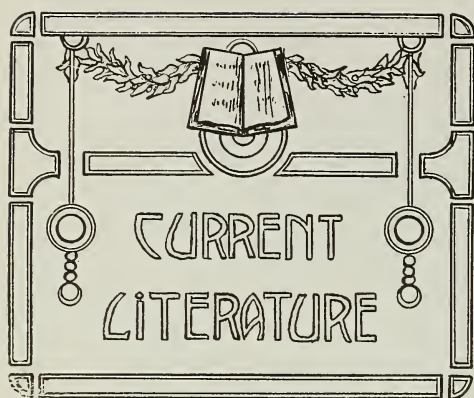
Jay M. Whitney, '16, is managing a farm at Kipton, Ohio.

Stanley B. Stowe, '08, agricultural agent in Clermont County, has been explaining the work of the county agent by meeting with various granges. Clermont County has no farm bureau organization as yet.

Glenn E. Roberts, '15, is managing a farm elevator in Findlay, Ohio. He reports good crops for the season in spite of the adverse weather conditions.

Joseph W. Ray, '14, and Ruth Beem were married August 26 at the bride's home near Pataskala, Ohio. They are living at Greensburg, Indiana, where Ray is teaching agriculture in a newly organized vocational school. He writes, "This is my fourth year in the Greensburg schools but my first in vocational work. I do the teaching in the forenoons only and supervise home project work in the afternoons. I am coming to be a firm believer in the successful future of vocational agricultural training in the secondary schools. Ohio might well profit by Indiana's example and experience along this line."

Ralph W. Jordan, '14, is secretary of the Ohio Vegetable Growers Association and is manager of the Ohio Muck Farming Company's lands near Lockwood, Ohio.



“Productive Feeding of Farm Animals,” by F. W. Woll, which has recently been revised and added to, is a book that has been put out to furnish students in agricultural schools and colleges as well as practical farmers with a concise discussion of the principles of feeding farm animals and of the various feeding stuffs available to stockmen. The different feeding practices for the various classes of farm animals are also given and discussed which point the way to profitable methods of stock feeding under the conditions existing on American farms. The material in the manual is divided into three parts. Part I deals with feeding standards and the value of the different feeds. In Part II a description is given of the different feeding stuffs and in Part III the feeding of the different classes of farm animals is taken up. A special chapter on poultry feeding has been added. 362 pages, 96 illustrations. \$1.50 net. J. B. Lippincott Company, Philadelphia.

—x—

In an interesting book for children, “The Farmer and His Friends,” Eva March Tappan has provided not only agreeable reading matter but also some useful information for children. The story of each of the more common

crops and classes of domestic animals is told in an instructive way that the fruitfulness of the earth both above and below ground can be apprehended. Reading the book will not only give the reader a description of the things discussed but rather one that shows that they are produced as a result of many interesting processes. 106 pages, Houghton-Mifflin Company, New York.

—x—

“Standard Practical Plumbing,” by R. M. Starbuck, is a practical treatise which appeals to the beginner as a book of instruction as well as to the practicing plumber as a book of instruction. The author takes up a consideration of the tools of the plumber after which he follows with chapters on the manual work of the plumbing with a discussion of phases of trapping, venting and drainage. Special chapters are devoted to important classes of plumbing construction. The latter part of the work is given to the subjects of hot and cold water supply, modern country plumbing and to filtration of sewage and water supply. Special attention is called to the merits of what is known as “continuous venting.” 406 pages, 347 illustrations. \$3.00. Norman W. Henley Company, New York.

—x—

“Fertilizers” by the late Edward B. Voorhees and newly revised by John H. Voorhees, is a book in which is discussed the source, character and composition of the natural home made and manufactured fertilizers. The author has pointed out and discussed the underlying principles and important problems connected with the use of fertilizers. The book is intended for the general reader as well as for the student. 365 pages, \$1.50. The Macmillan Company, New York.

DECEMBER NEWS NOTES

SHORT TERM OPENS JANUARY 2.

Providing for instruction in 31 different courses directly related to farming, the College of Agriculture will open an 8-week, winter term in agriculture on January 2, which is open to men and boys who have had farm experience. Last year the oldest man was 65 and the youngest boy was 17.

Bulletins which are being sent to any address show that the courses deal with the breeding and feeding of live stock, dairying, horticulture, poultry husbandry, floriculture, soil fertility and veterinary medicine. Students who complete the dairy courses and pass the required civil service examination are qualified for testing cows under state supervision and to become testers for cooperative testing associations.

As a supplement to the course, a series of 25 lectures given by men engaged in commercial farming and officials from the Ohio Agricultural Experiment Station, has been prepared. One will be given at 4 o'clock each day throughout the course. Winter course students will also attend Farmers' Week. The total expense required for the winter courses is estimated at less than \$60.

WILL CONDUCT 40 SCHOOLS.

Under the auspices of the Ohio State agricultural extension service and the U. S. Department of Agriculture, forty extension schools in as many different counties will be held in Ohio during the winter. Instruction will be given for both men and women by specialists in the different departments.

Lectures, demonstrations and laboratory work will be given in soil fertility, dairying, horticulture, animal husbandry, and poultry husbandry. A new course in agricultural engineering will

include concrete work and rope tying. The home economics lectures besides cooking include sanitation, clothing, house furnishing and home management.

IS PREPARING STATE MAP.

In cooperation with the department of agriculture, the university extension department is preparing a special state map to show the location of places of scenic beauty and historic interest and also the best roads of Ohio.

The work of preparation is being done under the direction of Prof. P. H. Elwood of the department of landscape architecture in the university. The map will be out about December 15.

FORMER DEAN WILL SPEAK.

Homer C. Price, former dean of the College of Agriculture, is among the speakers scheduled to address the special session for agricultural teachers on Thursday afternoon, December 28. Mr. Price will talk on "Agricultural Teaching and the Improvement of Farm Methods."

Other speakers are Clark S. Wheeler, director of the agricultural extension who will speak on "How the Extension Service can Cooperate with the Teachers of Agriculture," and Prof. Paul L. Vogt of the department of rural economics on "The Agricultural Teacher and the Community." Plans to establish a permanent organization of agricultural teachers will be discussed at the close of the meeting.

COLUMBUS LANDS DAIRY SHOW.

Columbus has scored another success and further added to its fame as a convention city by landing the 1917 National Dairy Show the largest organ-

ization of its kind in the world. The show will be held for ten days next October and will according to present estimates bring over 500,000 visitors to Columbus. This year the show was held at Springfield, Massachusetts, a city which made a strong bid for its return in 1917.

The National Dairy Show was first organized in 1903 by several prominent dairy men principally with the idea of educating the public in the value of dairy products as a food and to encourage the breeding of better dairy stock. The organization later came under the control of the Chicago Stock Yards association who abandoned it during the epidemic of foot and mouth disease in 1914. The show then came back into the control of the original members in which position it is at present. The show has grown rapidly in size and value of exhibits until at present it is attended and patronized by prominent dairy men from all parts of the country.

Columbus is practically in the center of the dairy district and this coupled with the excellent hotel accommodations and unusual adaptability of the State Fair Grounds for an exhibit of this sort were largely responsible for the Buckeye capitol being chosen.

The only condition placed by the dairy show committee who have the matter in charge is that a coliseum be built on the fair grounds. Assurances have been given by the state administration that such a building will be erected and according to present plans an auditorium seating 12,000 and costing \$200,000 will be built.

According to Prof. Oscar Erf, head of the department of dairying at Ohio State and former president of the National Dairy Show Association, the exhibition will be of great value to the state and the university in particular.

"The show will not only give the agricultural students an excellent opportunity to see prize winning stock but a large percent of the visitors will probably come to the campus and will learn something of our institution" said Prof. Erf.

FARMERS' WEEK.

With sixty lectures and demonstrations on agriculture and home economics, by agricultural authorities of Ohio and of the United States the Fifth Annual Farmers' Week at Ohio State University will be held from January 29 to February 2. At least 4000 visitors are expected as the attendance last year was 3000 which was double the attendance of the year before.

In addition to the lectures and demonstrations, the various state agricultural societies will hold exhibits and meetings. Among these will be the Ohio Dairymen's Association, Ohio State Horticultural Society, Ohio Vegetable Growers' Association, Ohio Rural Life Association, Ohio Percheron Breeders' Association, Ayrshire and Holstein Breeders' Association, Ohio Jersey Cattle Club, and Ohio Guernsey Breeders' Association.

The state boys' stock judging contest will be held during the week and will be conducted by W. H. Palmer, state leader of boys' and girls' club work. This contest will be open to winners of the county judging contests conducted by the extension department last fall.

Every facility that the university offers will be brought forward to entertain the many visitors and no charge is made for anything. In arranging the program an effort has been made by those in charge to offer instruction, inspiration and educational entertainment. Lectures and demonstrations are scheduled from eight o'clock in the morning until five o'clock in the after-

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noon with evening lectures on popular subjects. The museum and all buildings of the University will be open for inspection during the week.

OHIO STATE DAY.

Featuring the new university song book "Songs of Ohio State University" celebrations in the form of song-fests, banquets and dances were held by students and alumni both in and out of the state on Ohio State day, Friday, December 1. In nearly every city of importance from the Atlantic to the Pacific where alumni could be found Old Grads gathered and with speeches and songs renewed memories of former days.

Celebrations held within the state were in charge of the committee of 88, composed of 88 undergraduate students representing as many different counties.

NEW DAIRY RECORDS.

Three new dairy records for Ohio have been made in the last month. One broke the butterfat record for Jerseys, another the milk production record for Holsteins, and the other the butter fat record for three year Holsteins 8 months after calving.

Fox's Queen of Minerva, owned by Hugh W. Bonnell of Youngstown, broke the Jersey record by producing 823.5 pounds of butterfat and 14,403.1 pounds of milk in one year. Royalton De Kol Violet, owned by H. A. McQuillin of Delta, broke the Holstein record by producing 1,040.3 pounds of butterfat and 29,963.3 pounds of milk. Novelty McKinley Hengerveld, owned by the Lothian Riverode Stock Farm Company of Novelty, broke the record for butterfat production in the senior 3-year-old Holstein class not only for Ohio but also the world's record. She produced in 7 days 423.1 pounds of

milk containing 16,987 pounds of butterfat.

OHIO STATE CORN SHOW.

With \$300 in cash prizes and 27 classes offered, the ninth annual Ohio State Corn Show will be held in Townshend Hall during Farmers' Week, January 29 to February 2, 1917. Two silver cups will also be offered as prizes.

The state will be divided into four divisions with separate classes in each. The best ears of corn in each division will be entered for the grand champion sweepstakes prize which is a trophy cup given by "The National Stockman and Farmer." Another trophy cup will be awarded by the Ohio State Grange to the grange securing the greatest number of points made as awards to individual exhibitors from the respective granges.

Besides the corn classes there will also be exhibits of potatoes, wheat, oats, rye, barley, soy beans, clover and timothy seed and potatoes. This is the first time that potatoes have been included in the show. There will be five classes. The show will occupy the first floor of Townshend Hall.

OHIO WINS FOOTBALL TITLE.

Ohio State, "Babes" of the western conference, has come into her own with a vengeance. After playing a heavy schedule in which three of the strongest teams in the west, Illinois, Wisconsin and Northwestern were met has earned the undisputed right to be called champions of the western conference.

The remarkable record of the Buckeye team must be placed on the united team work, efficient coaching under the able direction of Jack Wilce and the phenomenal playing of "Chic" Harley, Ohio's right half back, who has not only been picked unanimously as all western half but has been placed by

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Tuition: Gentlemen, per term of 10 lessons, \$5; Ladies, \$4; which can be paid \$1 per week until paid.

Private Lessons by appointment any day or evening. Private tuition, \$1 per lesson; six lessons for \$5.

Premier Dancing Club every Saturday night.

Assembly Dance (open night), K. of C. Hall, State and Sixth Streets, every Saturday night.

Junior Assembly Dance (open night), Premier Academy, Keith Theatre Building, every Tuesday night.

many football authorities on the mythical All American team. Bolen, H. J. Courtney and Holtkamp are other members who have been mentioned on All Western teams.

Prospects for next year are bright with but two regulars, Captain Sorensen and Norton both backfield men lost by graduation. Ohio also has a supply of good substitutes and this year's freshmen team who will be eligible for duty next year.

The scores for the season were:

Ohio.....	12	Ohio Wesleyan.	0
Ohio.....	128	Oberlin	0
Ohio.....	7	Illinois	6
Ohio.....	14	Wisconsin	13
Ohio.....	46	Indiana	7
Ohio.....	28	Case	0
Ohio.....	23	Northwestern..	3

HOLD APPLE SHOW.

Twenty classes and special exhibits will feature the sixth annual Apple Show to be held under the auspices of the Ohio State University Horticultural Society, December 14 to 16, in the Horticultural and Forestry Building. More than \$300 will be offered as premiums and cash prizes.

Included in the exhibits are classes for student apple exhibitors, grower and faculty exhibitors, student vegetable growers, and grower vegetable exhibitors. The prize for the student grand sweepstakes is a cup given by the President of the University. To the grower and faculty exhibitor having the best display will be given prizes valued at \$32.00. Prizes amounting to \$25.00 will be given in the apple pie baking classes.

Special features at the show include a curiosity shop; an apple pie eating contest, apple show grill room, educational exhibits and apple insects and diseases, a western apple display in boxes, foresters' display and demon-

strations by the home economics girls. In the students' judging contest four prizes amounting to \$10.00 will be of-

ADVANCED SOILS CLASS.

Under the direction of Professor Firman E. Bear, the class in advanced soils spent Saturday, October 7, at the Ohio Agricultural Experiment Station. The forenoon was spent in going over the farm with Director Thorne of the Station, who carefully explained the treatment that was being received by the different plots and told the results that had been accomplished by the experiments. The afternoon was taken up by a trip thru the laboratories and offices of the Station. The methods by which a newly purchased farm would be started in experiment work was explained by C. G. Williams, agronomist at the station.

The Germantown experiment farm was also visited on the following Saturday. The system of experimentation that is carried on at this farm and the results obtained from it were explained by Henry M. Wachter, the resident manager of the farm. Another trip will be taken to Carpenter in Meigs County to study the soil in the unglaciated region of Ohio.

YOUNG INTERNATIONAL.

Exhibiting the University livestock which was taken to the International Livestock Exposition at Chicago, the Young International Livestock Show was held in the judging pavilion on Friday night, November 24. Three hundred people attended the show.

The program consisted of displays of the different classes of livestock. The fine points of each class were discussed by the different members of the department of animal husbandry. Included in the program were exhibits of beef and dairy cattle, hogs, sheep and horses.

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Assembly Dancing—Every Thursday and Saturday evening, 8:10 till 11 o'clock. Orchestra.

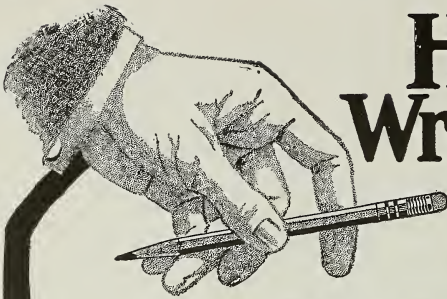
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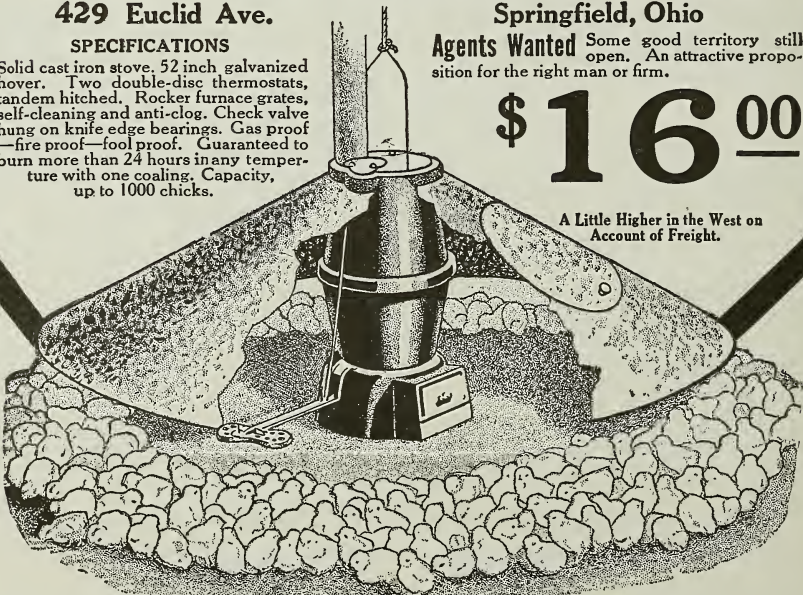
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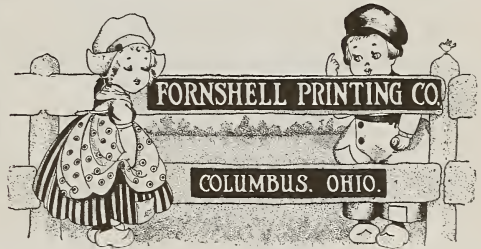
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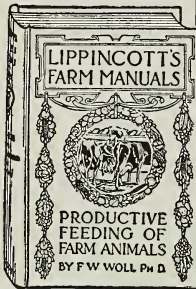


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COMPOSITION:

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Dewey's Ready Ration produces large milk flow. Dairy cows eat it greedily. Keeps them in good flesh—the pink of condition. Feed Dewey's Ready Ration and get

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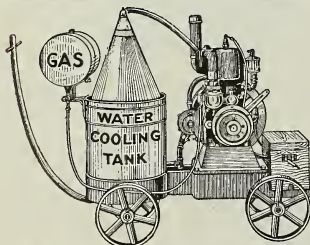
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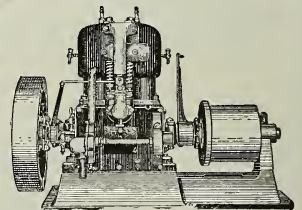
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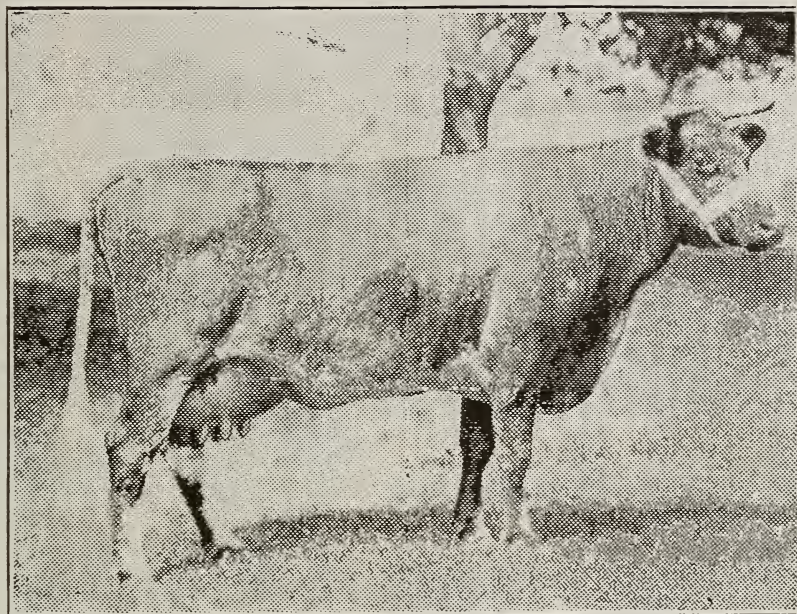


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150 Hd.
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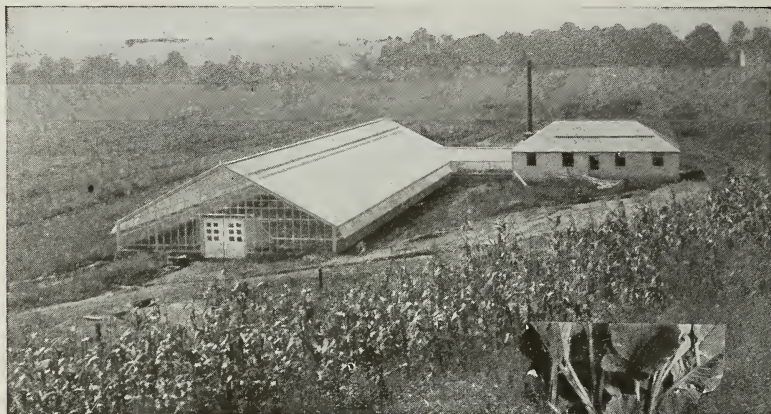
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C. W. BOSWORTH, of Milford, Ohio, hadn't been at truck farming long before he came to the conclusion that to get results from his acreage six months out of a year and the other six months let it be totally unproductive was pretty poor business.

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But he didn't go into this greenhouse question in any haphazard manner. He recognized its big possibilities and determined to start right.

First he made a careful study of greenhouse management—got at the subject from every angle. Then he visited a number of all-year-round growers in different sections to get first-hand information about greenhouse farming.

He fully realized that there were a host of things about a greenhouse—heating, ventilation, location, etc.—that should be left to those who make solving of greenhouse problems their business. So he asked us to send one of our greenhouse experts out to Milford and talk over with him the kind of greenhouse he had best build to start with. It ended with his ordering an iron frame one 40 x 150 feet with the work-room connected by a passage house. It is so laid out that it exactly meets his present requirements and can be enlarged economically, no matter if one or ten more houses are added.

Let us help you to get the right start in your all-year farming. We shall be heartily glad to work on your problems with you whenever you are ready to consider building.

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When you are out in the fields and woods with your shotgun this fall, or in the marshes waiting for the ducks, bear this fact in mind—*your sport would be much better if scientific game farming were conducted more extensively in this country.*

Game farming is being carried on much more extensively than formerly, especially during the past year. Evidence is plentiful to the effect that eventually we will pay as much attention to this important subject as have the people of Europe for many years. The wonderful grouse shooting in Scotland is one example of the results obtained there.

There are already many places in this country where good shooting is to be had in abundance due to scientific game breeding. It is quite possible that one or more of these is located within easy reach of your home. If you are interested we will gladly advise you regarding this if we have the information in our files. If not we will tell you how to make good shooting in your locality and put you in touch with others who are interested in this.

May we suggest that you write for our booklet, "Game Farming for Profit and Pleasure". It is well worth reading and sent free on request. Please use the coupon below.

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How much do you know about the powder you shoot in the fields or at the traps? You should be thoroughly informed regarding it and specify a given powder when you buy shells.

If you will write us we will gladly tell you about the two Hercules Smokeless Shotgun Powders, Infallible and "E. C."

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Gentlemen:—Please send me a copy of "Game Farming for Profit and Pleasure". I am interested in game breeding from the standpoint of.....

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De Laval Superiority

Demonstrated Once More at the National Dairy Show

Butter made from cream separated by De Laval Separators made the usual clean sweep of all highest awards at the great National Dairy Show held in Springfield, Mass., in October, this year, as it has always done at every National Dairy Show or Convention of the National Buttermakers' Association since the beginning of these

important annual contests in 1892. The highest scores in the various classes were as follows:

Whole Milk Creamery Butter

The highest award in the whole milk creamery butter class was made to N. C. Nelson, of Grove City, Pa., who is a user of a De Laval Power or Factory Separator—Score 96.

Farm Dairy Butter

The highest award in the farm dairy or home-made butter class was made to Mrs. P. H. Robinson, of Egypt, Mass., the butter-maker on Thomas W. Lawson's famous farm, and for fifteen years a De Laval user.

Market Cream

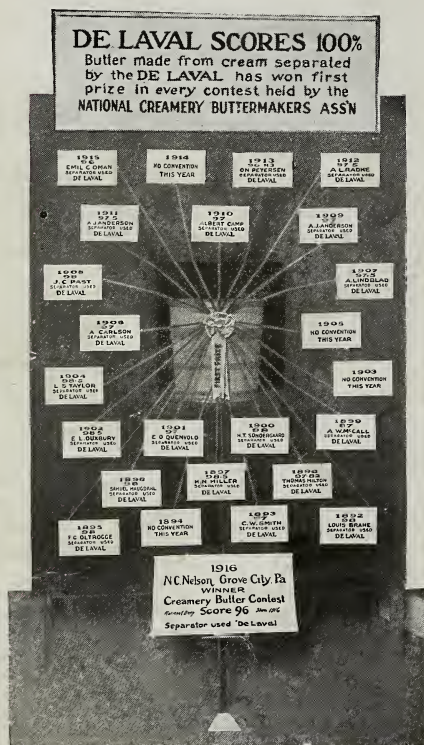
The three highest scoring entries in this class all came from the New England States, and each prize winner is a user of a De Laval Cream Separator. The scores were as follows:

First:—T. P. Lindsay, Southboro, Mass. Score 96. Mr. Lindsay has used a No. 17 De Laval for five years and says: "It can't be beat."

Second:—Branford Farms, Groton, Conn. Score 94½,

Third:—A. S. Harris, Fitchburg, Mass. Score 93.

Aside from the gold medal and highest awards in these important classes, the great majority of all other awards and highest scores were likewise given to De Laval users, again conclusively demonstrating the superiority of the De Laval dairy products, as at every other important quality contest the world over for nearly forty years.



This display was part of the De Laval Exhibit at the National Dairy Show. One farmer's wife after gazing at it for a few minutes, was heard to remark to a friend: "That Proves that the De Laval is I-T it."

The De Laval Separator Company

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